

Name \_\_\_\_\_

Period \_\_\_\_\_ Date \_\_\_\_\_

### **Gases Pre-Post Assessment**

How does a sample of gas differ in its behavior from a sample of liquid in the situations in numbers 1, 2, and 3?

1. The sample is transferred from one container to a larger one.
  - a. The gas will expand to fill the new container.
  - b. The liquid will expand to fill the new container.
  - c. Both the liquid and gas will settle on the bottom of the container.
2. The sample is heated in an expandable container, but no change of state occurs.
  - a. The container of liquid will expand 50-100 times more than the gas.
  - b. The container of gas will expand 50-100 times more than the liquid.
  - c. They will both expand equally.
  - d. Neither container will expand.
3. The sample is placed in a cylinder with a piston, and an external force is applied.
  - a. The volume of the liquid will decrease more than the gas.
  - b. The volume of the gas will decrease more than the liquid.
  - c. Neither volume will decrease.
4. If a liquid is heated until it vaporizes, is that a chemical or physical change?
5. As the temperature rises during a summer afternoon, what happens to the pressure in a car tire?
  - a. increases
  - b. decreases
  - c. stays the same
6. Why do you see the change in number 5 (think about the molecules)?
  - a. the heat causes the molecules of gas in the tire to escape
  - b. the molecules of gas heat up, move faster, and collide with the sides of the tire more frequently
  - c. the heat causes no change in the gas molecules
7. What is pressure equal to?
  - a. force x area
  - b. area/force
  - c. force/area
8. At a given temperature, the volume of a gas is inversely related to
  - a. its pressure
  - b. moles of gas
  - c. atmospheric pressure

9. If gas A and gas B are mixed in a fixed-volume container (assuming no chemical interactions), the total pressure will be
- the sum of the pressures of gas A and gas B
  - the product of the pressures of gas A and gas B
  - the pressure of gas A plus  $\frac{1}{2}$  the pressure of gas B
10. If a gas is put in a fixed-volume container, and that container is heated, what will happen to the frequency of collisions between gas molecules?
- the frequency will decrease because the gas will expand and there will be less space for the molecules to collide
  - the frequency will increase because the higher temperature will cause the molecules to move faster
  - the frequency will stay the same because there are still the same number of gas molecules
11. As you climb a mountain, what happens to the atmospheric pressure around you?
- it increases because you are working harder to climb
  - it decreases because the gas molecules are pulled toward the earth with less force
  - it stays constant because you have the same surface area for gas molecules to hit
12. If there is a fixed-volume flask of  $N_2$  gas, and more  $N_2$  gas is pumped in, what will happen to the pressure inside the flask?
- increase
  - decrease
  - stay the same
13. A sample of gas occupies 135 mL at  $22.5^\circ\text{C}$ ; the pressure is 165 mmHg. What is the pressure of the gas sample when it is placed in a 252 mL flask at a temperature of  $0.0^\circ\text{C}$ ?
14. How many moles of  $N_2$  gas are required to inflate a 25.0L air bag to a pressure of 1.3atm at  $25^\circ\text{C}$ ? Write one sentence per step explaining your action.
15. Water is heated in a beaker and the resulting steam is trapped. If we could see the atoms, what would they look like?
- hydrogen
- oxygen